



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

THE PROBLEM OF MAN'S ANTIQUITY AT VERO, FLORIDA

By GEORGE GRANT MacCURDY

DR. SELLARDS, whose discoveries at Vero, Florida,¹ have attracted so much interest, speaks with the authority of one who is thoroughly familiar with the site in question. To his foresight and the able assistance of Mr. H. Gunter, seconded by Messrs. Frank Ayers and Isaac M. Weills, their two local associates, we owe the recovery of new data bearing on the problem of man's antiquity in America. In view of the importance and complexity of the problem, Dr. Sellards very wisely sought the co-operation of anthropologists as well as additional geologists. The party invited to visit and report on the Vero site included Drs. Rollin T. Chamberlin, O. P. Hay, A. Hrdlička, T. Wayland

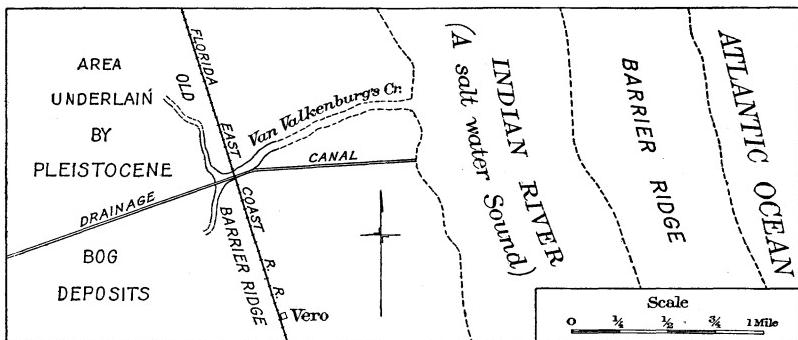


FIG. 45.—Rough sketch showing merely the general relations of the features discussed in the text. *Courtesy of University of Chicago Press.*

Vaughan, and the present writer. While the various visits which took place the latter part of October overlapped, the results of the investigations of each were unknown to the others until after the

¹ *American Journal of Science*, vol. XLII (July, 1916); *Eighth Annual Report Florida State Geological Survey*, 1916, pp. 121-160; *Science*, N.S., vol. XLIV (Oct. 27 1916).

publication of a symposium.² To this Dr. Sellards also contributed; his latest paper on the subject (p. 239 of this issue) calls attention to the diversity of views expressed by those who visited the locality. This diversity is due in a measure to the lack of coordination among the standards employed by the various observers; it proves alike the wisdom of cooperation in the effort to solve complex questions of this kind, and the unwisdom of basing conclusions on anything

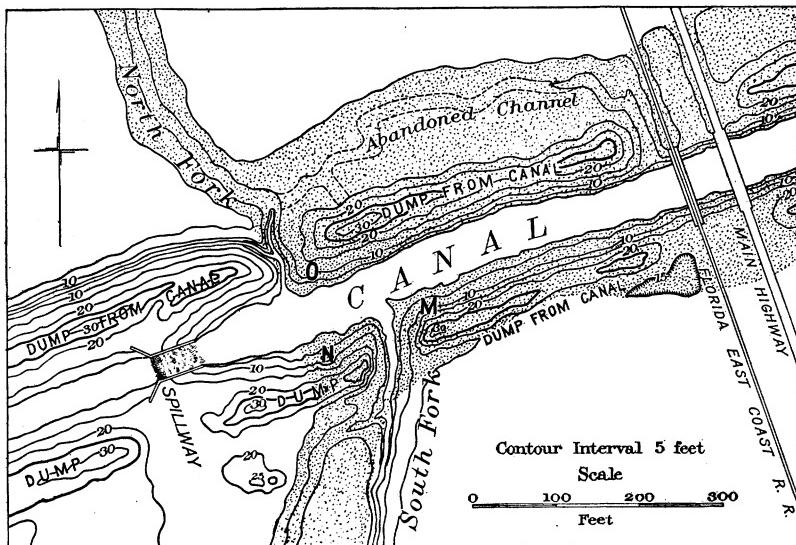


FIG. 46.—Detailed map of the locality where the human bones were found. The canal and the resulting dump piles have done much to change the original topography. The dotted area represents the flood plain of Van Valkenburg's Creek as it appears to have been just prior to the digging of the canal. The first human skeleton was found in formation no. 2 at point marked *M*, the second at point *N*, while human relics were found in formation no. 3 at point *O* as well as also near *N*. *Courtesy of University of Chicago Press.*

less than the sum total of the evidence. In the present case the evidence may not yet be all in.

Briefly there are at Vero three deposits, lower, middle, and upper. The lower deposit, no. 1 of Sellards, is a marine shell marl. It underlies the stream deposits of Van Valkenburg's creek and the adjacent country. The marine invertebrates in this lower

² *Journal of Geology*, vol. XXV, 1917, pp. 1-62.

deposit are essentially the same as the modern forms. Above the shell marl according to Chamberlin the channel, or creek-bottom, section differs from the upland section.

The relation of the drainage canal to Van Valkenburg's creek and its lateral tributaries and the relation of both to the site of the discoveries are made sufficiently clear in figures 45 and 46, both borrowed from Chamberlin. It will be seen that the channel of the creek is relatively wide as indicated by the dotted area in figure 46; it is likewise shallow. Through it the waters followed a shifting and uncertain course until the canal was built. The old creek had cut into the shell marl or coquina, so has the canal. The latter has cut through the creek-bottom deposits for a distance of some 800 feet of the channel exposing the section already described by Sellards, and which Chamberlin calls the section of the creek-bottoms.

The middle deposit, no. 2 of Sellards, rests upon the shell marl. There seems to have been a slight interval of erosion between the formation of the middle deposit and that of the upper deposit (no. 3 of Sellards). This last has been interpreted by Chamberlin as a flood-plain deposit, its upper surface constituting the flood-plain of Van Valkenburg's creek prior to 1913, when the drainage canal was dug. The middle and upper are both creek deposits and are alike characterized by terrestrial animal and plant remains. Some of the animal remains in these deposits represent genera and species that are now extinct.

Of the human bones, parts of one and the same skeleton were found in the middle layer as well as along the line of contact between the middle and the upper layer (*N*, fig. 46). This is known as skeleton no. II. Human bones said to have been found in the second layer include parts of a skeleton that were removed by Messrs. Ayers and Weills before Dr. Sellards was notified of their discovery (*M*, fig. 46). According to Mr. Ayers these bones "were all close together, the whole not being over one and one-half feet in width. They were not scattered at all, nor piled up"; they are referred to as skeleton no. I. The only other human bones reported are an incisor tooth from the upper layer and found near skeleton

no. II, a tooth of a child from the upper layer on the opposite side of the canal at O (fig. 46), and a toe bone of an adult also from the upper layer, likewise on the opposite side and some twenty feet farther down stream. None of the human bones differ in any way from Indian skeletal remains found in the sand mounds of Florida.

Most of the cultural remains were found on the south bank not far from skeleton no. II (at N); others were found on the opposite bank (at O), so that their distribution practically coincides with that of the human bones. In the present writer's opinion the markings on the tip of a proboscidian tusk and on the fragment of a bird bone, both from the middle deposit and previously figured by Dr. Sellards, are not the work of man and may be eliminated at once from the discussion. There remain a few flint spalls, an arrowhead, bone implements, a bone bead, and a considerable number of potsherds. Some of these specimens are here reproduced.

The flint spall seen in figure 47 is from the middle deposit, in

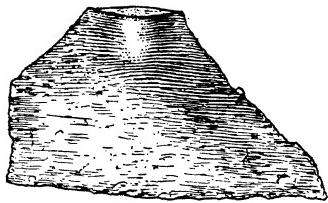


FIG. 47.



FIG. 48.



FIG. 49.

Figs. 47-49.—(47) Flint spall from stratum no. 2, south bank, 460 feet west of the bridge and near human bones; (48) flint spall of identical material from stratum no. 3, south bank, 460 feet west of the bridge, from siftings; (49) flint spall from stratum no. 2, south bank, 460 feet west of the bridge, from siftings ($\frac{1}{2}$). Nos. 6964, 7072, and 7049. *Courtesy of University of Chicago Press.*

the south bank and not more than three feet from certain bones of skeleton no. II. Another and smaller spall of identical material, which might well have been chipped from the same parent block, was found very near this one, but in the upper or muck deposit (fig. 48). It is significant that of these two chips of like material and so near each other in respect to horizontal displacement, one should have been from the upper and the other from the middle

layer. The question arises whether both might not have been originally in the third horizon, one having later worked its way down into the second horizon by the aid of growing roots or burrowing animals. In places, roots do penetrate the middle deposit.

These spalls were never retouched or utilized. Each has what the French call a *plan de frappe* (plane of percussion) and a well-marked bulb of percussion. The inner or conchoidal surface is fresh and the edges are unworn. They were evidently chipped from the parent block not far from where they were found. At one time the presence of a bulb of percussion was looked upon as a sure sign of human agency. Certain rare examples from the base of the Eocene at Belle-Assise, Clermont (Oise), and from the Oligocene at Boncelles, Belgium, are proof that the bulb is not an infallible sign. By accidentally letting one flint fall upon another, the writer has on one occasion unintentionally caused the production of a bulb of percussion. It is however quite logical to assume that the vast majority of chips with bulbs, that occur in Pleistocene and later deposits have been produced intentionally, especially when associated with human skeletal remains or with undoubted artifacts. This is doubly true at Vero, because the source of the flint is the Ocala or the Tampa formation a hundred miles to the northwest of Vero. The cores from which the chips were struck could not well have been transported that distance over so flat a country except through human agency.

The small flint chip reproduced in figure 49, and thought by Sellards to be an implement, is likewise only a chip or spall with its plane of percussion and bulb of percussion. The multiple facets on its back or outer surface are due to the fact that it was an inner instead of a superficial chip. It also is from the south bank, 460 feet west of the bridge, hence from near skeleton no. II and the other two spalls here reproduced. While obtained from siftings, it is believed by Dr. Sellards to have come from the second stratum. A typical arrowhead of flint with barbs and stem, the latter however broken off, came from the contact line between strata nos. 2 and 3 in the south bank and near skeleton no. II.

A majority of the bone implements are from near the base of

the third layer. Two found in siftings are thought to have come from the second layer; all however are of the same type (figs. 50-52). Figure 50 is a typical point from stratum no. 3, south bank, one of several from 450 to 470 feet west of the bridge. The fragment of a similar point, obtained in siftings from the second stratum, south bank, 462 feet west of the bridge, is shown in figure 51. Skeleton no. 11 was found 465 feet west of the bridge, in the midst of these various bone implements. Another and nearly complete point,



FIG. 50.



FIG. 51.



FIG. 52.

FIGS. 50-52.—(50) Bone point from stratum no. 3, south bank, 450-70 feet west of bridge; (51) fragment of bone point from siftings of stratum no. 2, south bank, 462 feet west of the bridge; (52) bone point from siftings of stratum no. 2 south bank, 480 feet west of the bridge (§). Nos. 6912, 6963, 6981. *Courtesy of University of Chicago Press.*

obtained in siftings from stratum no. 2, south bank, 480 feet west of the bridge, differs from the other two only in size (fig. 52).

So far as the writer is aware no potsherds have as yet been reported from stratum no. 2, although they occur somewhat plentifully near the base of stratum no. 3. Of the dozen sherds kindly sent by Dr. Sellards to New Haven, every one is more or less waterworn. When subjected to stream action these sherds would show the effects of wear quicker than would the bones, flints, and bone implements. The pottery is of fairly uniform quality, the paste being neither crude nor fine. It is black to brown in color and the walls are of medium thickness. Judging from these twelve sherds, the ware was unpainted and undecorated. Of the three

rim fragments, two are from bowls of medium size, the third somewhat thicker, is from a medium-sized bowl with slightly incurved rim. All these rims are plain but carefully finished. The smoke stains and accumulated soot indicate that these were culinary vessels. It should be recalled that the sherds, flints, and bone implements of stratum no. 3 are found in the north as well as the south bank of the canal at the junction of the two lateral valleys previously mentioned. None of these differ from similar antiquities found on the surface or in Florida mounds.

If we eliminate the specimens from siftings hitherto referred to the middle deposit, there is left in the way of artifacts nothing save the flint spall (see fig. 47). There has always been a question as to the status of skeleton no. 1. In his paper of the present issue, Dr. Sellards ignores it.

Of skeleton no. II, most of the fragments recovered are either from the line of contact between the middle and the upper deposit or else had fallen from the bank, only a few pieces being actually found *in situ* in the middle layer. Absolute proof that this skeleton is as old as the middle deposit would therefore seem to be lacking, especially when we consider that it comes from the bed of a stream. Why should it be any older than the typical barbed flint arrowhead found near it and along the same contact line? The two isolated teeth and the one toe bone belonging to two other individuals were all from the upper bed.

In the present state of our knowledge therefore, all we can be sure of is that the oldest human skeletal and cultural remains at Vero are as old as the base of the upper deposit; or that they date back as far as the time interval separating the middle from the upper deposit.

It is now believed by Dr. Sellards that no considerable period of time intervened between the deposition of the second and third layers. Professor Edward W. Berry, of Johns Hopkins University, who has been studying the plant remains from Vero is of the same opinion. If this be true, then it is all the more probable that at least some of the remains of extinct animals in these deposits are derived from older beds. Dr. Chamberlin believes them to have

come from the Pleistocene bog deposits directly to the west of the site (see fig. 45). From these bog deposits come the pebbles and cobbles of black sandstone found in the more recent middle deposit of the channel section. As yet however no animal remains seem to have been found *in situ* in these bog deposits, as pointed out by Dr. Sellards.

That Vero probably represents a concentration of fossil remains is indicated alike by the great variety and relative abundance of these, and by the topographic features of the place (see fig. 46). A concentration due solely to natural causes takes time, besides it opens the door not only to forms then or recently living but also to those of still older epochs. It does not follow therefore that man and the *Mylodon* were contemporaneous at Vero. The very fact that the medley of vertebrate fauna at Vero is so different from the present fauna of the region, while the human bones and artifacts are in every respect like those from pre-Columbian mounds, is a hint that should appeal to the cautious observer.

It is generally conceded that cultural remains are a much more sensitive chronometer than are animal remains. A lapse of time indicated by the faunal changes at Vero should be marked by even more profound changes in the character of the artifacts; but here we find nothing of the kind. The Crô-Magnon race has been cited as proof that the human bones from Vero are of Pleistocene age. But the race of Crô-Magnon is different in stature as well as bodily and facial proportions from the recent inhabitants of the Dordogne; while the Vero skeletons do not differ from those of the Florida Indians. Besides Crô-Magnon cultural remains are unlike those of the neolithic period.

After an examination of the plant remains from Vero, Professor Berry concludes that there is no appreciable difference between the ages of the middle and the upper layer, and that they represent a maximum age of three or four thousand years. He is sure that the two deposits are relatively very young, although some of the plants are indicative of conditions somewhat different from those prevailing at the present time in that part of Florida.

Thus far, nothing that would indicate post-Columbian contact

with the native population has been reported from the Vero site; neither have copper or metal objects been found. From the mounds of Florida, Mr. Clarence B. Moore has taken various objects made of native copper and hence aboriginal. The absence from Vero of both these classes of specimens does not prove that the use of metals was unknown at that time; it should however be given due weight in a consideration of the age of the human bones and cultural remains from the site in question.

To summarize the evidences of man's antiquity at Vero, the human bones and cultural remains all have every appearance of belonging to one and the same age, as if they might even have come from the same village site or burying ground. They point to a period that might well have continued down to the close of the prehistoric period in Florida. In no respect whatsoever do they resemble the remains from the Pleistocene of any known part of the world.

The bone points are of a type that is widely distributed; they can be duplicated in collections from the southern mounds as well as the ruined pueblos of the Southwest. They represent the universal sewing implement of savage women and persist even to the present day. Their use is well known in basketry-making and other textile operations. The bone fish-hooks are exactly like those from scores of sites along the Atlantic coast as well as inland. In the Yale Museum are two such from an Indian grave at Beach Park, Clinton, Connecticut, which also contained arrowheads and a polished stone celt.

The same is true of the pottery, which even in its crudest form is never found in the horizon of the archaic argillite culture of the Delaware valley for instance. In a word there is nothing new or unexpected in the particular combination of cultural and human skeletal remains at Vero. Among the bone implements sent to New Haven for study was the sting of a sting-ray. This sting is a ready-made implement well known to the Indians; it is found in prehistoric sites along the Atlantic coast.¹ In the Academy of

¹On April 6 Dr. Sellards reported by letter the finding in the third layer, of a fragment from the head end of a slender bone pin with delicate crisscross incised

Natural Sciences, Philadelphia, there is a good example from a mound near Crystal river, Citrus county, Florida.

The antiquity of this combination of remains would seem to be fairly well represented in the figures ascribed by Professor Berry to the plant remains from both layers, namely a maximum of three or four thousand years.

It is only when one considers the formidable array of extinct mammals from the two layers in question that apparent lack of harmony arises; for even in the third layer we still have *Elephas columbi*, *Mastodon (Mammut) americanum*, *Chlamydothereium*, and a species of horse and of tapir. Here is the first element of uncertainty, for even paleontologists are not yet in a position to say just when these various forms became extinct in Florida. That the *Mastodon* lived on until recent times even in more northern climes, there can be little doubt. Of the extinct vertebrate fauna mentioned in Dr. Sellards' present paper, *Smilodon*, *Mylodon*, peccary, and camel do not occur in the third layer, and hence in the opinion of the author might properly be excluded from the discussion. If the extinct fauna in question was contemporary with the race that left the Vero type of culture, evidences thereof in other parts of the country, where both are known to have existed, would not still be lacking; unless the culture appeared earlier, or the fauna persisted longer, in Florida than elsewhere. Of these two alternatives, the persistence of the fauna is the more easily believable. At all events in the face of the irreconcilable differences between the combination of anthropological phenomena on the one hand and of paleontological on the other, and until there is forthcoming exact evidence as to the date of disappearance in Florida of the extinct vertebrates in this list, to say one is assured of the accuracy of the conclusion that the human remains and artifacts from Vero are of the Pleistocene period is to base one's conclusion on a forced correlation.

YALE UNIVERSITY,
NEW HAVEN, CONN.

decoration, also two perforated teeth of the shark. The pin is of the type found in Florida mounds. Neither is there reason to suppose that the two perforated teeth antedate the mound culture.